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**EUROPEAN PATENT APPLICATION**

21 Application number: **86303916.0**

51 Int. Cl.<sup>3</sup>: **A 61 K 39/10**

22 Date of filing: **22.05.86**

30 Priority: **22.05.85 GB 8512972**

43 Date of publication of application:  
**26.11.86 Bulletin 86/48**

88 Date of deferred publication of search report: **17.11.88**

84 Designated Contracting States:  
**AT BE CH DE FR GB IT LI LU NL SE**

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54 **Vaccine production.**

57 The present invention provides a method of preparing a substantially non-toxic immunogenic preparation of pertussis toxin comprising treatment of pertussis toxin with a carbodiimide. The preparation may be used for vaccination against whooping cough as well as making vaccines for use in immunisation against whooping cough. Desirably the pertussis toxin is treated in the form of an intimate admixture with filamentous haemagglutinin.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y	INFECTION AND IMMUNITY, vol. 33, no. 3, September 1981, pages 820-826; J.J. MUNOZ et al.: "Biological activities of crystalline pertussigen from Bordetella pertussis" * Page 820, abstract; page 820, column 2, "Detoxification of pertussigen"; page 821, column 1, lines 1-13 * ---	1-11	A 61 K 39/10
Y	INFECTION AND IMMUNITY, vol. 37, no. 2, August 1982, pages 550-557; F.A. KLIPSTEIN et al.: "Development of a vaccine of cross-linked heat-stable and heat-labile enterotoxins that protects against Escherichia coli producing either enterotoxin" * Page 550, abstract; page 551, column 2, "Conjugation"; pages 555-556, "Discussion" * ---	1-11	
Y	CHEMICAL ABSTRACTS, vol. 100, no. 3, 16th January 1984, page 178, abstract no. 18993u, Columbus, Ohio, US; R.D. SEKURA et al.: "Pertussis toxin. Affinity purification of a new ADP-ribosyltransferase" & J. BIOL. CHEM. 1983. 258(23), 14647-51 * Abstract * -----	5-6	TECHNICAL FIELDS SEARCHED (Int. Cl.4)  A 61 K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 05-09-1988	Examiner FERNANDEZ Y BRANAS F.J.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			